



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/718,207

11/20/2003

Tak Kui Wang

10030686-1

9803

7590

04/26/2005

AGILENT TECHNOLOGIES, INC.

Legal Department, DL 429

Intellectual Property Administration

P.O. Box 7599

Loveland, CO 80537-0599

EXAMINER

PAK, SUNG H

ART UNIT

PAPER NUMBER

2874

DATE MAILED: 04/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Sm

Office Action Summary	Application No. 10/718,207	Applicant(s) WANG ET AL.	
	Examiner Sung H. Pak	Art Unit 2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1103</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

Information disclosure statement filed 11/20/2003 has been considered by the examiner.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-2, 9-10, 12, 15 are rejected under 35 U.S.C. 102(e) as being anticipated by Takada (US 6,863,452 B2).

Takada discloses an optical device with all the limitations set forth in the claims, including: an alignment assembly enclosed within an optics module having a light source ('19' Fig. 1) and a lens ('13' Fig. 1) comprising: an alignment stage ('16, 10' Fig. 1) coupled to enable adjustment of a relative position of said light source and said lens (column 14 lines 16-28), said alignment stage being manipulable from an exterior of said optics module (column 14 lines 16-28), a meltable material positioned within said optics module to lock said alignment stage in a fixed location when a target said relative position of said light source and lens is achieved ('29' Fig. 11), and a heat source in heat-transfer engagement with said meltable material to selectively melt said meltable material ('27' Fig. 12; column 17 lines 30-59);

wherein said alignment stage is responsive to first applied displacement forces which induce lateral movements of said alignment stage in achieving said target relative position of said light source and said lens (column 14 lines 16-28), said alignment stage being responsive to second applied displacement forces which induce said alignment stage to contact said meltable material when said target relative position is achieved (Fig. 5-6; column 16 lines 4-17).

Regarding claims 15, Takada discloses a method of forming elements discussed above.

Takada further discloses: an optics module comprising: an enclosure (Fig. 1), a light source within ('19' Fig. 1) said enclosure, a lens ('13' Fig. 1) positioned within said enclosure to optically manipulate a beam generated by said light source, an alignment assembly ('16, 10' Fig. 1) enabled to vary the relative positioning between said lens and an axis of said beam (Fig. 3-4), said alignment assembly being located within said enclosure, said alignment assembly including support members ('15' Fig. 1) which are flexible to provide said varying relative positioning in a direction generally perpendicular to said axis (flexible when melted; Fig. 3-4; column 16 lines 4-18), said alignment assembly being responsive to actuator forces to flex said support members (in response to force pressing '11' and '17' together), a locking mechanism which disables said alignment assembly to provide a fixed said relative positioning in which said alignment assembly is unresponsive to said actuator forces (Fig. 5-6; permanent fix after '10a' and '17c' are cooled), and input/output connections at an exterior of said enclosure for operating said alignment assembly and said locking mechanism (Fig. 1);

wherein one of said light source and said lens is fixed to said alignment assembly (Fig. 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 20-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Pham et al (US 2004/0052468 A1).

Pham discloses a method of providing optical alignment with all the limitations set forth in the claims, except it does not explicitly teach the use of a lens.

Specifically Pham discloses a method of providing optical alignment within an optics module comprising: applying actuator signals to laterally displace an alignment stage which controls the relative lateral position of a beam axis to a beam receiver (abstract, paragraph 0032), including controlling said actuator signals to provide a target said relative lateral position, detecting when said target relative lateral position is achieved (paragraph 0035); shifting said

Art Unit: 2874

alignment stage in a direction generally parallel to said beam axis to contact said alignment stage with a meltable material, including melting said meltable material, and cooling said meltable material to fix said alignment stage in a position to maintain said target relative lateral position (paragraph 0035: shifting of alignment stage in a direction parallel to the beam axis occurs during the heating and the cooling of the solder);

further comprising a fusible structure which disables lateral movement of said alignment stage following said cooling step (abstract);

wherein applying said actuator signal is a step of manipulating thermal actuators that support said alignment stage (paragraph 0028-0036);

wherein melting said meltable material is a step of applying heat to a gold/tin alloy (paragraph 0039).

However, the use of a lens in a beam receiver device is common and well known in the art. Such configuration is considered advantageous and desirable in the art because it allows for the coupled optical beam to be focused onto a beam receiver, such as a photodetector, and enhances optical coupling efficiency. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Pham device to use a lens along with the beam receiver device in an alignment stage.

Claims 3-5, 8, 11, 13, 16-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada (US 6,863,452 B2) in view of Pham et al (US 20040052468 A1).

Takada discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not explicitly teach the use of: a source of electrostatic force for

Art Unit: 2874

inducing displacement so as to bring the alignment assembly into contact; a metallic plating on the alignment stage; and a gold/tin alloy solder.

On the other hand, Pham explicitly teaches the use of a source for electrostatic force for inducing displacement so as to align optical components for optimal optical transmission (abstract, paragraph 0010, 0030); a metallic plating on the alignment stage (paragraph 0025); and a gold/tin alloy solder (paragraph 0039). Such arrangement is advantageous and desirable over the prior art actuation method, because it allows for accurate and precise displacement of optical components capable of minute amount of displacement. Thus, it allows for more accurate optical alignment. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Takada device to have a source of electrostatic force for inducing displacement as shown in Pham.

Claims 6-7, 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takada (US 6,863,452 B2) in view of Pham et al (US 20040052468 A1) as applied to claims above, and further in view of Marquez et al (US 2004/0114882 A1).

Takada, in view of Pham, renders all the claimed limitations set forth in the claims obvious as discussed above. However, Takada does not explicitly teach the alignment stage, the meltable material and the heat source being integrated components defined by plurality of layers on a substrate.

Marquez, on the other hand, explicitly teach the use of alignment stage, meltable material, and heat source being integrated components defined by plurality of layers on a substrate (paragraph 0022-0026). This arrangement is considered advantageous and desirable

Art Unit: 2874

over the prior art, because it provides highly accurate optical alignment with soldering process that is very robust and repeatable (paragraph 0020). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Takada device to have alignment stage, meltable material, and heat source being integrated as plurality of layers on a substrate.

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Malone (US 6,626,585), Hahn et al (US 5,499,312), and Goodfellow et al (US 4,357,072) disclose method and apparatus for achieving optical coupling with accurate alignment via meltable material.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sung H. Pak
Examiner
Art Unit 2874

sp